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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/719,567	11/21/2003	Paul R. Hart	194-27710-USCP	3547

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EXAMINER
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DRODGE, JOSEPH W

ART UNIT	PAPER NUMBER
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1723

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/27/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

## Office Action Summary

Application No.

10/719,567

Applicant(s)

HART, PAUL R.

Examiner

Joseph W. Drodge

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 17 January 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-4,6,7 and 10-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4,6,7 and 10-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

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The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-4,6,7 and 10-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bellos et al patent 5,853,592 in view of Augustin et al patent 5,045,212 **and in view of Valint et al patent 4,835,234 (newly cited and newly added).**

***Bellos discloses treating aqueous, i.e. "water-like fluid phase" streams from oil well production fluids from which oil has been primarily initially separated (column 3, lines 20-33, especially lines 24-26).***

Bellos et al disclose a composition, for separating water-soluble organics and water (Abstract, et. Seq.) essentially consisting of a hydrophilic, hydroxymonocarboxylic acid, such as hydroxyacetic acid or AHA (column 6, lines 25-32), [inherently having the relatively high pKa of instant claims 2, 11 and 16 (see also column 6, lines 12-24, etc. of

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the reference) and chemical formulation of instant claims 3,12 and 17], such organic acid optionally constituting essentially all or 99% of the active ingredient, relative to inorganic acid and minor amounts of other ingredient (column 6, lines 52-61 and column 6, line 66-column 7, line 12). Bellos also disclose that the composition may comprise a "minor amount" of one or more other ingredient such as a demulsifier (column 6, line 66-column 7, line 9).

***The demulsifiers may either be added separately or in combination with the feed or with the organic or inorganic acid (column 7, lines 17-21).***

***Each of the amounts of each minor ingredients may constitute less than 1% by weight of the composition, hence giving a ratio of AHA to demulsifier of over 50:1. The composition may or may not be in the form of an aqueous solution before being mixed with oil/water mixture being treated (column 5, lines 42-60 and Figure 1).***

***With regard to criticality of presence/absence of inorganic acid in the composition, see column 5, lines 54-59 of Bellos that states that inorganic acid may be added to the fluid being treated separately from and after addition of the AHA organic acid.***

The instant claims all differ in requiring the demulsifier to constitute an anionic polymer. However, Augustin et al teach to separate oil/water emulsions by anionic demulsifiers (column 2, lines 14-21). ***Specifically, Augustin teaches, with regard to crude oil production streams, to firstly add a cationic demulsifier to separate out much of the oil in a clarified oil phase and then to further purify an aqueous***

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***phase stream from which the oil phase has been initially separated, by sequentially adding an amount of inorganic demulsifier and then an amount of anionic demulsifier that is an anionic polymer to the resulting aqueous phase to further clarify such aqueous phase (column 1, lines 45-61, column 2, lines 14-21 and 45-68 and the Table bridging columns 3 and 4 indicating amounts of inorganic demulsifier and anionic polymeric demulsifier added to the aqueous phase).***

***Valint et al also teach separation of oil-in-water emulsions such as result in crude oil production and in metal working (column 1, lines 30-55) and teach to sequentially add a cationic polymers or surfactants to break up most of the oil, followed by addition of anionic polymeric flocculants, and in the absence of intermediate steps of addition of inorganic demulsifier as in Augustin (column 9, lines 9-59).***

It would have been obvious to one of ordinary skill in the art to have employed an anionic polymeric demulsifier taught by Augustin et al as a demulsifier component of Bellos et al when treating aqueous streams from which the largest quantity of oil has been preliminarily removed, since these demulsifiers are shown to result in separated water phase, having an environmentally permissible very low degree of contamination with oily contaminants, and lower than the other well known types of demulsifiers (see column 1, lines 21-50 of Augustin for such explicit motivation). ***It would also have been obvious to have added, specifically, an anionic, polymeric demulsifier, to the***

***composition applied by Bellos, since Augustin teaches that this type demulsifier results in an aqueous phase resulting from crude oil production being sufficiently clarified to permit its discharge into an outfall ditch, thus meeting environmental standards (column 1, lines 28-36 and column 2, lines 58-62 of Augustin). It is conjectured that adaptations of Augustin in the Bellos method envisions first adding a small amount of inorganic demulsifier followed by addition of an anionic polymeric demulsifier/AHA blend, and then later followed by addition of an inorganic acid (see particularly column 5, lines 54-63 of Bellos et al).***

For claims 8 through 18, column 6, line 66-column 7, line 3 and column 7, lines 9-12, indicate a relatively high ratio of AHA to minor ingredient of demulsifier.

For claims 15-18, the composition may comprise also water-like fluid phase or water and other solubilized organics, such as organic wetting agents, that are soluble in the added water (column 7, lines 3-12). If necessary, the composition is added to a fluid mixture being separated, including water and solubilized organics (column 8, lines 4-34), resulting in a mixture encompassing the water and organics being separated as well as the active organic acid ingredient and demulsifier.

***For claims 2-4,6 and 7, the claimed "AKA" values and particular claimed organic acids are disclosed in Bellos at column 6, lines 12-28) while Augustin generally teaches the specific anionic polymers claimed.***

Augustin teaches the anionic polymer being copolymers of acrylic or methacrylic acid and acrylamides and esters thereof for claims 4,7,13 and 18 at column 2, lines 14-21, and these having a high degree of polymerization as in claims 5,6 and 14 (see

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column 2, lines 17-19 concerning the polymers preferably having a high molecular weight exceeding 0.8 million, thus necessarily having a degree of polymerization well above the claimed 30 figure.

Applicant's arguments filed on 17 January 2007 have been fully considered but they are not persuasive, particularly when the newly applied Valint et al patent is applied in combination with the applied prior art of record.

It is argued that Bellos taken in its entirety teaches that demulsifiers are not desirable or important, especially since their use is not mentioned in the "examples". It is submitted that

It is argued that there is no suggestion in Augustin to choose an anionic polymeric demulsifier from amongst a wide array of demulsifiers. However, the forementioned text sections of Augustin, *in combination with the newly cited Valint reference* teach that anionic demulsifier uniquely results in the previously treated and separated aqueous phase resulting from an original crude oil/water emulsified mixture having a low enough level of residual oil to be discharged to the environment.

It is also argued that Augustin requires that anionic co-polymers must be used *together* with cationic demulsifiers and inorganic demulsifier. It is submitted that Bellos also discloses treating aqueous phases from which the bulk of the oil has already been removed, rather than oil/water emulsions directly derived from crude oil production. Use of cationic demulsifier and inorganic demulsifier as taught by Augustin for treating the original oil/water emulsion would thus be in a separate stage from which the Bellos

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composition is added. In addition, in treating the resulting aqueous phase, Augustin teaches to add anionic polymer and inorganic demulsifier at separate times, with the amount of anionic polymer being added being a factor of 10 to 100 times greater than amount of the other demulsifier (Table of Augustin). ***Importantly, Valint teaches the use of anionic polymer flocculant subsequent to previous use of cationic flocculant with no intervening use of inorganic demulsifiers of flocculants.***

It is argued that there is no motivation to choose anionic polymeric demulsifiers in preference to the other demulsifiers taught by Bellos. Anionic polymeric flocculants are suggested in preference to the other demulsifiers taught by Augustin, since a chief embodiment of Bellos concerns treatment of aqueous phases from which the oil phase has already been removed, since anionic polymeric flocculant are used in much larger quantity than other flocculants taught by Augustin and since both references are ultimately concerned with final adequate removal of organic contaminants, sufficient to allow the water use for re-injection into the wells or it's disposal without requiring high cost waste treatment procedures. ***Again, see Valint's teaching of anionic polymers without use of inorganic demulsifiers.***

It is generally argued that applicant's composition treat oil/water emulsions by use of AHA and anionic polymeric flocculant without a need for use of cationic demulsifier as used in the applied prior art. It is submitted that such argument is not commensurate with the claims in that the claims do not preclude use of cationic demulsifier or other treatment chemical either prior to or after use of the claimed composition, by separate addition or in a separate stage. Both Bellos and Augustin as



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well as Valint teach that breaking/separating of oil/water emulsions and subsequent removal of soluble organics from water-like, mainly aqueous phases separated from the original emulsions. The claims do not preclude use of any other, diverse, material or composition from the oil/water emulsion or resulting separated phases, both preceding and following treatment with AHA and anionic polymeric demulsifier mix.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph Drodge at telephone number 571-272-1140. The examiner can normally be reached on Monday-Friday from 8:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steve Griffin, can be reached at 571-272-1189. The fax phone number for the examining group where this application is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either private PAIR or Public PAIR, and through Private PAIR only for unpublished applications. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have any questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JWD

February 20, 2007

*Joseph Drodge*  
*Primary Examiner*